



A study on management of urban traffic demand in Himachal Pradesh

Anupam Sharma

Assistant Professor, Faculty of Commerce and Management, Bahra University, Solan, Himachal Pradesh, India

Abstract

Urban traffic demand and control are critical issues that affect the quality of life in urban areas. This research paper investigates the factors that contribute to the demand for urban traffic and the strategies that can be employed to control traffic and improve transportation efficiency. A review of existing literature on urban traffic management and demand forecasting techniques was conducted to provide a comprehensive understanding of the topic. The findings of this research have important implications for policymakers, transportation planners, and urban designers in improving urban transportation efficiency and sustainability. The study provides insights into the factors that drive urban traffic demand and identifies effective strategies to manage traffic and promote sustainable transportation options.

Keywords: Road traffic management, frequency requirement of traffic, congestion

Introduction

Urban traffic demand refers to the number of people and vehicles that require transportation services in urban areas. As urban populations continue to grow and urbanization accelerates, the demand for transportation services has increased, resulting in significant traffic congestion, air pollution and environmental degradation. Several factors contribute to the growth in urban traffic demand. One of the primary drivers is population growth. As urban populations continue to increase, so does the demand for transportation services. In many urban areas, the growth in population has outpaced the expansion of transportation infrastructure, leading to increased traffic congestion, longer travel times, and reduced mobility. Economic development is another significant driver of urban traffic demand. As urban economies grow, there is an increased demand for goods and services, resulting in increased commercial traffic. The growth in the logistics sector, e-commerce, and delivery services has led to an increase in freight traffic, contributing to traffic congestion and environmental pollution. The growth in urban traffic demand has significant implications for transportation planners, policymakers, and urban designers.

Objectives of the study

1. To study the level of traffic demand
2. To study the measures being applied for control of urban traffic.

Scope and methodology

The scope of the study is limited to studying the level of traffic demand in urban areas in Himachal Pradesh. The results and inferences drawn are based on the responses of respondents. Data was collected from respondents residing and commuting in urban areas and was analyzed by using suitable statistical tools.

Sampling design

The sampling has been taken on the basis of stratification of the vehicles from the three cities. The clusters of sampling of the respondents from the cities have been taken on the basis of their population ratio. Further, convenience random sampling method has been applied to seek the responses from each category of vehicle holders from each city and the respondents have been taken as one respondent from each vehicle irrespective of the condition of ownership i.e. one respondent from the vehicle on convenience basis who can be the owners or others plying the vehicle. The sampling design is as shown below:

Table 1: Sampling design

Criteria of Vehicles	Respondents (Ratio Shimla 70.8, Solan 16.4, Dharamshala 12.8)			
	Shimla	Solan	Dharamshala	Total
Buses	9	2	2	13
Goods Carrier	59	13	10	82
Taxis	15	4	3	22
Cars	171	39	31	241
Others	22	7	3	32
Total number of respondents	276	65	49	390

Analysis and discussion

With regard to examine the management of road traffic demand and control, the responses of the informants are analyzed as below:

Table 2: Attributes of Management of Road Traffic Demand and Control: The Perspective of Respondent Commuters

Attribute	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	\bar{x}	S.D.	Sk.
Public transport is suitable for daily travelling.	68	91	152	63	16	3.34	1.07	-.05	-.596
Availability of Sufficient Parking Spaces in your City/Town.	10	38	79	184	79	2.27	.98	.730	.196
Urban Planning is efficient in the City in terms of Road expansion.	8	50	107	148	77	2.39	1.01	.388	-.469
Efficiency of Urban Planning in the City in terms of Availability of Parking.	22	48	126	148	46	2.62	1.03	.470	-.180
Traffic Personnel are Supportive.	64	71	154	59	42	3.14	1.18	-.075	-.656
Traffic Authorities are Implementing Rules Strictly.	63	90	151	44	42	3.23	1.17	-.244	-.549
Increase in Private Vehicle Ownership.	103	101	159	16	11	3.69	.99	-.283	-.269
There is check on the number of private vehicle ownership to control traffic related problems.	26	44	174	81	65	2.71	1.08	.130	-.323
Govt. applies measures like parking fees, entry tax etc. to discourage excessive movement of private vehicles.	20	48	189	78	55	2.74	1.01	.011	-.137

The viewpoint of respondents with regard to the suitability of public transport for daily travelling has a mean value of 3.34 with standard deviation of 1.07 suggesting that the responses fall in neutral bracket with variation indicating responses within agreed to disagreed with the statement. Further, the skewness of -0.05 suggests that the distribution is skewed towards the positive side of the scale due to which the inclination of the responses is towards agreed side and Kurtosis at -0.596 suggests that the distribution of not peaked but spread. Therefore, the kurtosis is platykurtic. This suggests that the respondents admit that public transport for daily travelling is suitable in their town or city but show inconsistency in the responses.

With respect to the views of respondents on the availability of sufficient parking spaces in their city, the mean score of the responses was measured at 2.27 with the standard deviation of 0.98 indicating that the respondents disagree with the statement though due to high variation the responses fall within neutral and strongly disagreed brackets. While analyzing the statement with the help of skewness, since value of Skewness being positive at 0.730, it suggests that the distribution is inclined towards the negative side inferring that the respondents disagree with the statement and positive value of kurtosis at 0.196 depicts that the responses are fairly bunched and the distribution is leptokurtic. This suggests that majority of respondents have a negative view with respect to the availability of sufficient parking spaces in their city.

The perception regarding existence of efficient urban planning with respect to road expansion in the city, has a mean value of 2.39 with standard deviation of 1.01 signifying that the responses fall in disagreed bracket with high level of variation indicating responses between neutral to strongly disagreed. The skewness being positive at 0.388 reveals that the responses are fairly skewed towards disagree. The negative value of kurtosis at -0.469 depicts that the responses are highly spread and the distribution is platykurtic. It can, therefore, be inferred that with respect to road expansion in the city, the respondents have mixed views and they do not consider efficient urban planning in terms of its initiative towards road expansion in the town or cities.

Responses on efficiency of urban planning with respect to the availability of parking in the city has been perceived to be disagreed as the mean value in five point scale is computed 2.62. However, the responses have been analyzed with high variation as the value of standard deviation is 1.03

depicting that the responses lie within the larger range i.e. between neutral and strongly disagree. Since the value of skewness being positive at 0.470 it indicates that the responses are skewed towards disagreed on the above statement and the negative value of kurtosis at -0.180 indicates that responses are thoroughly spread and the distribution is platykurtic. This indicates that the respondents have a negative view on the aspect of efficiency of urban planning with respect to providing parking in the city.

With respect to supportiveness of traffic personnel, the respondents are neutral though vary widely indicating responses to be agreed to disagreed about this statement as the mean value was at 3.14 i.e. neutral with standard deviation of 1.18 being very high variation indicating that the responses lie between agree and disagree. The negative value of skewness at -0.75 reveals that the responses are skewed towards positive side i.e. agreed, whereas, the negative value of kurtosis (-0.656) infers that the responses are spread and inconsistent. This shows that though the respondents are neutral yet inclined towards agreeing that traffic personnel are supportive.

To determine whether informants believe that the traffic control authorities should implement the traffic rules strictly, the results reveal that there is a neutral response as the mean score is calculated 3.23 with standard deviation of 1.17 due to which it can be asserted that the responses lie between agree and disagree. Further, since the value of skewness is negative at -0.244 it means that the responses are skewed towards the positive side (neutral to agreed) and the negative value of kurtosis at -0.549 indicates that the responses are not consistent but fairly spread and the distribution in platykurtic. This shows that the informants are neutral regarding requirement of strict behaviour of the traffic control authorities for strict implementation of traffic rules.

With respect to perception of increase in the number of private vehicle ownership the mean value of the responses was calculated at 3.69 with standard deviation of 0.99 suggesting that the responses are neutral to agreed and since the variation is high, it is mostly between agreed to neutral. The negative value of skewness at -0.283 also suggests that the responses are skewed towards positive side and the negative value of kurtosis at -0.269 suggests that the responses are inconsistent and the distribution in platykurtic. This indicates that the respondents agree that the number of private vehicle ownership has increased.

Respondents' views were sought on whether they feel that there should be a check on the number of private vehicle ownership to control traffic related problems. The mean value was 2.71 while computing this statement as per the responses on five point scale which indicated that the informants disagreed with the statement. However, a standard deviation of 1.08 suggests that the responses are between neutral and disagreed. Further, the positive value of skewness at 0.130 suggests that the responses are skewed towards the negative side. The negative value of kurtosis at -0.323 indicates that the responses are widely spread and the distribution is platykurtic. Therefore it can be stated that the informants disagreed that there should be a check on the number of private vehicle ownership to control traffic related problems.

Regarding govt. should apply measures like high parking fees, entry tax etc. to discourage excessive movement of private vehicles, there has been analyzed disagreement as the mean score is counted 2.74 with standard deviation of 1.01 suggesting that the responses lie between neutral and disagreed. Whereas, the positive value of skewness at 0.011 suggests that the responses are skewed towards the negative side. The negative value of kurtosis at -0.137 indicates that the responses are widely spread showing inconsistency.

Conclusion, findings and suggestions

The study finds that the respondents admit that public transport is suitable for daily travelling in their town or city. Majority of respondents have a negative view with respect to the availability of sufficient parking spaces in their city. With respect to road expansion in the city, the respondents have mixed views and they do not consider efficient urban planning in terms of its initiative towards road expansion in the town or cities. The respondents have a negative view on the aspect of efficiency of urban planning with respect to providing parking in the city. The respondents are neutral yet inclined towards agreeing that traffic personnel are supportive and also they are of the view that harshness should not be there towards the public from traffic authorities.

Therefore, it is suggested that given the rise in traffic demand, the traffic management authorities should respond proactively in addressing the issue. Urban planning should be taken seriously by involving experienced professionals and should be implemented in letter and spirit. New technologies may be used in the management of traffic and constructing parking spaces.

References

1. Statistical Outline of Himachal Pradesh
2. Statistical Year Book of Himachal Pradesh
3. Statistical Abstract of Himachal Pradesh
4. Census of India
5. Economic Survey of Himachal Pradesh